

## **REMARKS**

This communication is in reply to the Notice of Non-Compliant Amendment mailed March 7, 2007, the shortened statutory period for which runs until April 7, 2007. Since the Notice of Non-Compliant Amendment referred to both the "Remarks" section and the "Amendments to the Claims" section, both of these sections are provided in this communication.

The "Amendments to the Claims" section is not changed herein and is thus the same as the corresponding section in the Reply to Office Action filed on December 11, 2006. Claims 60-80 have been canceled. Claims 81, 85, and 88 have been amended. Claims 102-122 have been added. Hence, Claims 1-2, 4, 6, 10, 12, 15-16, 20, 23-24, 31, 34, 38, 42, 47-48, 51, 54-56, 59, and 81-122 are currently pending in the application. Claims 81, 85, and 88 have been amended to correct informalities and to clarify features already existing in the claims, and not for the purpose overcoming prior art. New Claims 102-122 are of similar scope as canceled Claims 60-80.

The "Remarks" section is corrected herein to present arguments in support of new Claims 102-122 as indicated in sub-section (I)(D) below.

### **I. ISSUES RELATING TO THE CITED ART**

#### **A. INDEPENDENT CLAIM 1**

Claim 1 was rejected under 35 U.S.C. § 102(b) as allegedly anticipated by Mittra, U.S. Pat. No. 5,748,736 ("MITTRA"). The rejection is respectfully traversed.

Claim 1 comprises the features of:

...;

the plurality of multicast proxy service nodes are logically represented by a first binary tree, wherein:

each node of the first binary tree is associated with a domain of a plurality of domains of a directory service that is distributed across the wide area network;

...;

creating and storing a second binary tree that represents the plurality of member nodes, wherein:

the second binary tree is stored in a particular domain of the plurality of domains of the directory service that is distributed across the wide area network;

...;

when an additional member node joins the multicast group, determining a new group session key by replicating a branch of the second binary tree.

MITTRA does not teach or suggest the above features of Claim 1.

1. MITTRA does not teach or suggest the feature of Claim 1 of determining a new group session key by replicating a branch of the second binary tree when an additional member node joins the multicast group.

The Office Action asserts that the above feature of Claim 1 is described in col. 8, lines 3-32 of MITTRA. This assertion is incorrect.

In col. 8, lines 3-14, MITTRA describes that a Group Security Controller (GSC) and a new member may establish a secure channel that is separate from the communication channel established between the GSC and existing members. Once the GSC and the new member have authenticated each other and have agreed on a secret, the GSC may provide the new member with information that will allow the new member to encrypt/decrypt multicast transmissions from the GCS to the member nodes. The GCS also needs to change the group key (Kgrp) which provides access to the multicast transmissions for the existing members. (MITTRA, col. 8, lines 15-25.) Once the new Kgrp key has been generated by the GSC, the current multicast group and the joining member all need to be apprised by the new Kgrp key. (MITTRA, col. 8, lines 23-25.) In col. 8, lines 25-32, MITTRA continues to state that

To do this the GCS **sends a multicast transmission** containing the new Kgrp encrypted using the old Kgrp to the current multicast group telling them to now use the new Kgrp. This assumes that all senders are also receivers; if this is not the case, senders that are not also receivers need to be notified individually **using separate secure channels** the GSC maintains with each of the senders. (Emphasis added.)

Thus, the above passage from MITTRA makes it clear that the GSC distributes the new Kgrp key to the multicast group members by sending a multicast message or over secure point-to-point channels.

In contrast, Claim 1 includes the feature of determining a new group session key by replicating a branch of the second binary tree, where the second binary tree represents the members of the multicast group. Thus, in Claim 1 the new group session key is determined by replicating a branch of a binary tree. Neither the above passage nor any other passage from MITTRA teaches, describes, or suggests that replication is used in determining the new Kgrp key. On the contrary. By describing that the new Kgrp key is distributed in a multicast transmission or over a point-to-point channel, MITTRA in fact teaches away from the above

feature of Claim 1. Further, MITTRA does not teach, describe, or suggest that multicast group members are represented in a binary tree; thus, MITTRA cannot possibly teach or suggest that the new Kgrp key is determined by replication of a binary tree branch, as featured in Claim 1.

For the above reasons, MITTRA does not teach or suggest the feature of Claim 1 of determining a new group session key by replicating a branch of the second binary tree when an additional member node joins the multicast group.

2. MITTRA does not teach or suggest the features of Claim 1 of: (1) representing a plurality of multicast proxy service nodes in a first binary tree, where each node of the first binary tree is associated with a domain of a plurality of domains of a directory service that is distributed across a wide-area network; and (2) creating and storing a second binary tree in a particular domain of the plurality of domains, where the second binary tree represents the plurality of member nodes.

MITTRA does not describe or suggest the above features of Claim 1. There is absolutely nothing in MITTRA that describes or suggests a directory service and a plurality of domains thereof. The Office Action asserts that the above features of Claim 1 are described in col. 6, lines 3-38 of MITTRA. This assertion is incorrect.

In col. 6, lines 3-38, MITTRA describes Figs. 1 and 2 which are block diagrams of systems that include a GSC, senders, receivers, and Trusted Intermediary (TI) servers. While Figs. 1 and 2 of MITTRA may be illustrating systems in which multicast communications may be sent, there is absolutely nothing in MITTRA that teaches or suggests that the components of such systems belong to a plurality of domains of a directory service. Since neither Figs. 1 and 2 nor any passage of MITTRA teach or suggest a directory service and a plurality of domains thereof, MITTRA cannot possibly describe the features of Claim 1 of: (1) representing a plurality of multicast proxy service nodes in a first binary tree, where each node of the first binary tree is associated with a domain of a plurality of domains of a directory service that is distributed across a wide-area network; and (2) creating and storing a second binary tree in a particular domain of the plurality of domains, where the second binary tree represents the plurality of member nodes.

For the reasons given above, MITTRA does not teach all features of Claim 1. Thus, Claim 1 is patentable under 35 U.S.C. § 102(b) over MITTRA. Reconsideration and withdrawal of the rejection of Claim 1 is respectfully requested.

B. INDEPENDENT CLAIMS 59 AND 81

Claims 59 and 81 were rejected under 35 U.S.C. § 102(b) as allegedly anticipated by MITTRA.

Claims 59 and 81 include features similar to the features of Claim 1 discussed above. For this reason, Claims 59 and 81 are patentable under 35 U.S.C. § 102(b) over MITTRA for at least the reasons given above with respect to Claim 1. Reconsideration and withdrawal of the rejections of Claims 59 and 81 is respectfully requested.

C. DEPENDENT CLAIMS 2, 4, 6, 10, 12, 15-16, 20, 23-24, 31, 34, 38, 42, 47-48, 51, 54-56, and 82-101

Claims 2, 4, 6, 10, 12, 15-16, 20, 23-24, 31, 34, 38, 42, 47-48, 51, 54-56, and 82-101 were rejected under 35 U.S.C. § 102(b) as allegedly anticipated by MITTRA.

Each of Claims 2, 4, 6, 10, 12, 15-16, 20, 23-24, 31, 34, 38, 42, 47-48, 51, 54-56, and 82-101 depends from one of independent Claims 1 and 81, and thus includes each and every feature of the independent base claim. In addition, each of Claims 2, 4, 6, 10, 12, 15-16, 20, 23-24, 31, 34, 38, 42, 47-48, 51, 54-56, and 82-101 introduces one or more additional features that independently render it patentable. However, due to the fundamental differences already identified, to expedite the positive resolution of this application a separate discussion of those features is not included at this time. Therefore, it is respectfully submitted that Claims 2, 4, 6, 10, 12, 15-16, 20, 23-24, 31, 34, 38, 42, 47-48, 51, 54-56, and 82-101 are allowable for the reasons given above with respect to Claims 1 and 81. Reconsideration and withdrawal of the rejections of Claims 2, 4, 6, 10, 12, 15-16, 20, 23-24, 31, 34, 38, 42, 47-48, 51, 54-56, and 82-101 is respectfully requested.

D. NEW CLAIMS 102-122

Claims 102-122 are of similar scope as canceled Claims 60-80, respectively. The Office Action rejected Claims 60-80 under 35 U.S.C. § 102(b) as allegedly anticipated by MITTRA.

Independent Claim 102 comprises the features of:

...;

first logic encoded in one or more tangible media for execution and when executed

operable to create and store a first binary tree that represents the plurality of multicast proxy service nodes, wherein:  
each node of the first binary tree is associated with a domain of a plurality of domains of a directory service that is distributed across the wide area network;

...;

second logic encoded in one or more tangible media for execution and when executed operable to:

create and store, in a particular domain of the plurality of domains of the directory service that is distributed across the wide area network, a second binary tree that represents the plurality of member nodes, ...;

...;

determine a new group session key by replicating a branch of the second binary tree when an additional member node joins the multicast group.

MITTRA does not teach or suggest the above features of Claim 102.

1. MITTRA does not teach or suggest the feature of Claim 102 of logic operable to determine a new group session key by replicating a branch of the second binary tree when an additional member node joins the multicast group.

The Office Action seems to assert that the above feature of Claim 102 is described in col. 7, line 28 to col. 8, line 35 of MITTRA. This assertion is incorrect.

In col. 7, lines 28-43, MITTRA describes the types of entities participating in a secure multicast. In col. 7, line 45 to col. 8, line 2, MITTRA describes that joining a secure multicast group would require a joining member to first set up a secure channel with the Group Security Controller (GSC), where the purpose of the secure channel is to facilitate and isolate confidential communications between the GSC and the member during the time that the member is part of the group. The GSC has full knowledge of the group membership and can communicate with each member separately by using a private database to store the members' identifications and information about the secure channel. Further, only the GSC maintains information concerning group membership; members do not know generally about each other.

In col. 8, lines 3-14, MITTRA describes that a GSC and a new member may establish a secure channel that is separate from the communication channel established between the GSC and existing members. Once the GSC and the new member have authenticated each other and have agreed on a secret, the GSC may provide the new member with information that will allow the new member to encrypt/decrypt multicast transmissions from the GCS to

the member nodes. The GCS also needs to change the group key (Kgrp) which provides access to the multicast transmissions for the existing members. (MITTRA, col. 8, lines 15-25.) Once the new Kgrp key has been generated by the GSC, the current multicast group and the joining member all need to be appraised by the new Kgrp key. (MITTRA, col. 8, lines 23-25.) In col. 8, lines 25-32, MITTRA continues to state that

To do this the GCS **sends a multicast transmission** containing the new Kgrp encrypted using the old Kgrp to the current multicast group telling them to now use the new Kgrp. This assumes that all senders are also receivers; if this is not the case, senders that are not also receivers need to be notified individually **using separate secure channels** the GSC maintains with each of the senders. (Emphasis added.)

Thus, the above passage from MITTRA makes it clear that the GSC distributes the new Kgrp key to the multicast group members by sending a multicast message or over secure point-to-point channels.

In contrast, Claim 102 comprises the feature of logic operable to determine a new group session key by replicating a branch of the second binary tree, where the second binary tree represents the members of the multicast group. Thus, in Claim 102 the new group session key is determined by replicating a branch of a binary tree. Neither the above passages nor any other passage from MITTRA teaches, describes, or suggests that replication is used in determining the new Kgrp key. On the contrary. By describing that the new Kgrp key is distributed in a multicast transmission or over a point-to-point channel, MITTRA in fact teaches away from the above feature of Claim 102. Further, MITTRA does not teach, describe, or suggest that multicast group members are represented in a binary tree; thus, MITTRA cannot possibly teach or suggest that the new Kgrp key is determined by replication of a binary tree branch, as featured in Claim 102.

For the above reasons, MITTRA does not teach or suggest the feature of Claim 102 of logic operable to determine a new group session key by replicating a branch of the second binary tree when an additional member node joins the multicast group.

2. MITTRA does not teach or suggest the features of Claim 102 of: (1) logic operable to create and store a first binary tree that represents a plurality of multicast proxy service nodes, where each node of the first binary tree is associated with a domain of a plurality of domains of a directory service that is distributed across a wide-area network; and (2)

logic operable to create and store a second binary tree in a particular domain of the plurality of domains, where the second binary tree represents the plurality of member nodes.

MITTRA does not describe or suggest the above features of Claim 102. There is nothing in MITTRA that describes or suggests a directory service and a plurality of domains thereof. The Office Action asserts that the above features of Claim 102 are described in col. 6, lines 3-38 of MITTRA. This assertion is incorrect.

In col. 6, lines 3-38, MITTRA describes Figs. 1 and 2 which are block diagrams of systems that include a GSC, senders, receivers, and Trusted Intermediary (TI) servers. While Figs. 1 and 2 of MITTRA may be illustrating systems in which multicast communications may be sent, there is absolutely nothing in MITTRA that teaches or suggests that the components of such systems belong to a plurality of domains of a directory service. Since neither Figs. 1 and 2 nor any passage of MITTRA teach or suggest a directory service and a plurality of domains thereof, MITTRA cannot possibly describe the features of Claim 1 of: (1) logic operable to create and store a first binary tree that represents a plurality of multicast proxy service nodes, where each node of the first binary tree is associated with a domain of a plurality of domains of a directory service that is distributed across a wide-area network; and (2) logic operable to create and store a second binary tree in a particular domain of the plurality of domains, where the second binary tree represents the plurality of member nodes.

For the reasons given above, MITTRA does not teach all features of Claim 102. Thus, Claim 102 is patentable under 35 U.S.C. § 102(b) over MITTRA. Allowance of Claim 102 is respectfully requested.

Each of Claims 103-122 depends from Claim 102 and thus includes each and every feature of the independent base claim. In addition, each of Claims 103-122 introduces one or more additional features that independently render it patentable. However, due to the fundamental differences already identified, to expedite the positive resolution of this application a separate discussion of those features is not included at this time. Therefore, it is respectfully submitted that Claims 103-122 are allowable for the reasons given above with respect to Claim 102. Consideration and allowance of Claims 103-122 is respectfully requested.

## II. CONCLUSION

The Notice of Non-Compliant Amendment incorrectly stated that the present application is under accelerated examination. The Applicant has not requested, and the Office has not granted special status for the present application. For this reason, extensions of time under 37 C.F.R. § 1.136 are permitted in the present application.

The Applicant believes that all issues raised in the Notice of Non-Compliant Amendment have been addressed. Entry of the present communication and reconsideration of the present application is respectfully requested in light of the amendments and remarks herein.


The Examiner is respectfully requested to contact the undersigned by telephone if it is believed that such contact would further the examination of the present application.

A petition for extension of time, to the extent necessary to make this reply timely filed, is hereby made. If applicable, a law firms' check for the petition for extension of time fee is enclosed herewith. If any applicable fee is missing or insufficient, throughout the pendency of this application, the Commissioner is hereby authorized to charge any applicable fees and to credit any overpayments to our Deposit Account No. 50-1302.

Respectfully submitted,

HICKMAN PALERMO TRUONG & BECKER LLP

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Stoycho D. Draganoff

Reg. No. 56,181

2055 Gateway Place, Suite 550  
San Jose, California 95110-1089  
Telephone No.: (408) 414-1080 ext. 208  
Facsimile No.: (408) 414-1076